Offline Computing Status

Peter Shanahan - Fermilab*

Week-in-the-North - May 23, 2006

Overview

- This talk:
- Progress since last meeting
- Plans, goals, and tasks

Recent Work

Contact with CompDiv

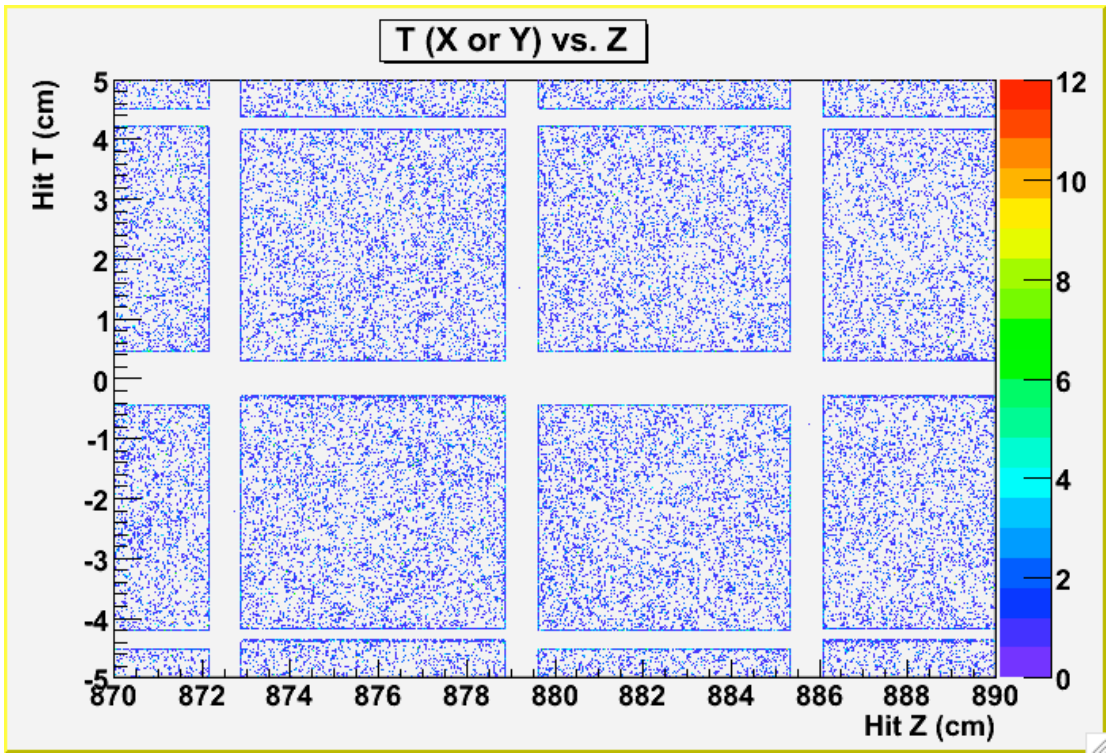
- Mark Messier and I have met with Vicky White (head of Fermilab Computing)
  - NOvA is recognized as a priority by CD
  - There just aren't many people available
  - We are unlikely to get anything other than shared resources for now. - FNALU cluster, etc.
- Vicky requested a "proto-MOU" from us
  - In the works...

DataBase

- Jon Paley (Indiana) is the new DataBase Coordinator
  - L2 Managers: Please contact (jpaley@fnal.gov) him with your expected needs.
  - The more immediate the need, the more immediate should be the contact!
- Leaning towards MySQL
- We will pursue acquiring a server machine at FNAL soon, but development will start at I.U.

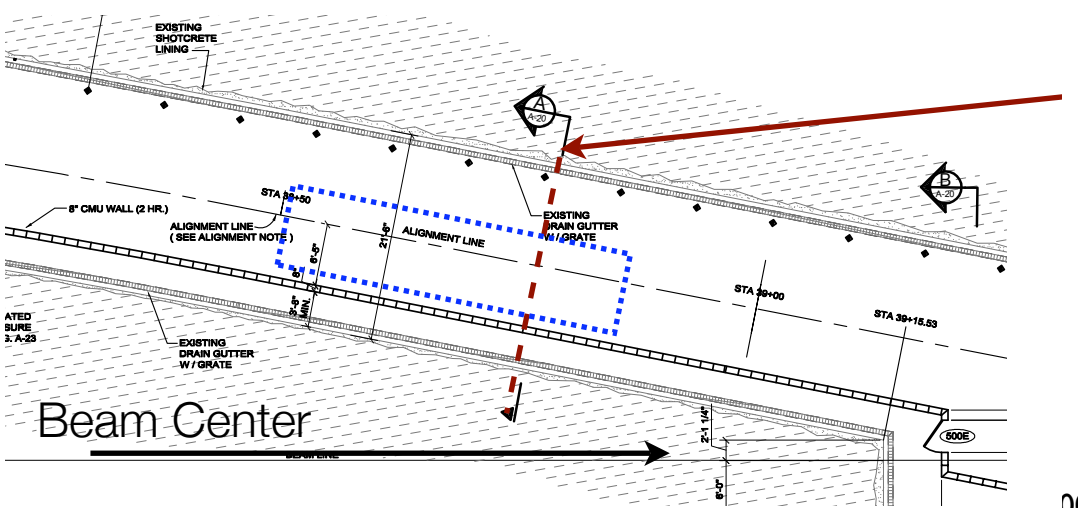
Simulations

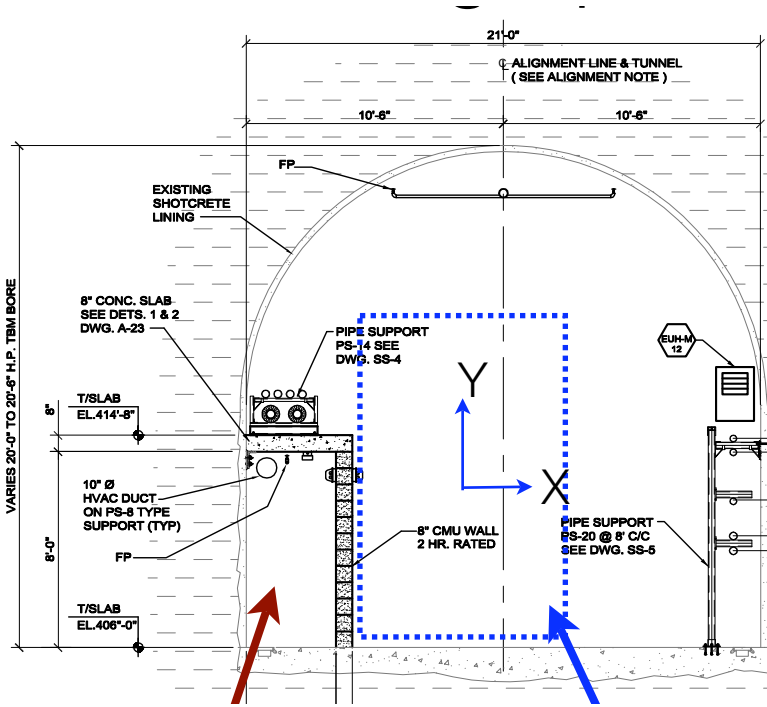
- Far Detector: Update and validate geometry - based on earlier work by Leon Mualem
- 10 files of 10k events each generated a la Leon
  - ν_μ (-bar) cc, nc (low and high energy), ν_e (-bar) cc
  - 1/E flux (needs user reweighting)



Near Detector

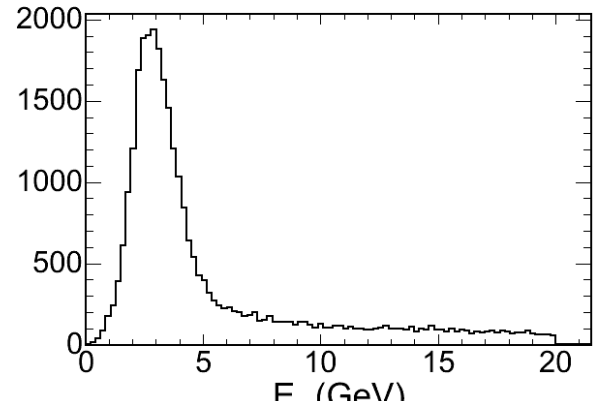
- First Full Simulation of NearDet
- Major goal - understand event rates per spill/ capability of Electronics
- Near Detector Location:
- Alysia Marino



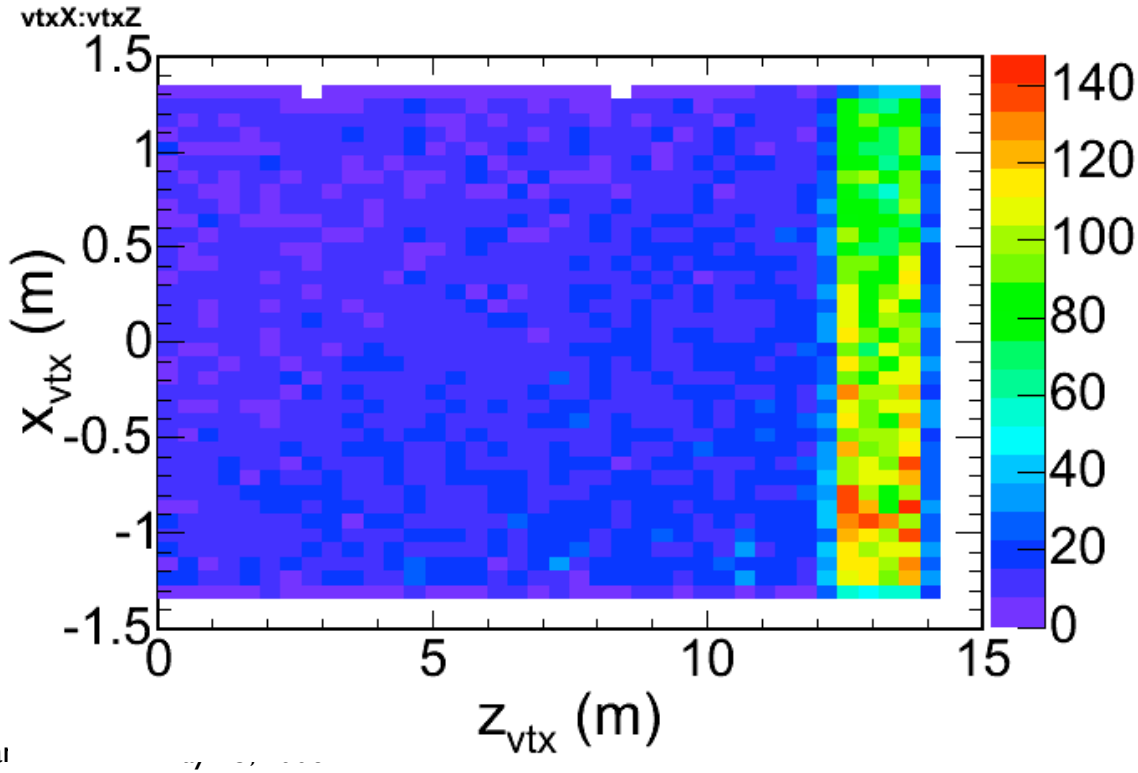


Near Detector Events

- Simulation of total rate
- Brian Rebel
  - MINOS Nominal Medium Energy Beam
  - 7.3 events/5e13 spill total
  - 3.5 events/5e13 spill TA
- Work in progress



X vs Z

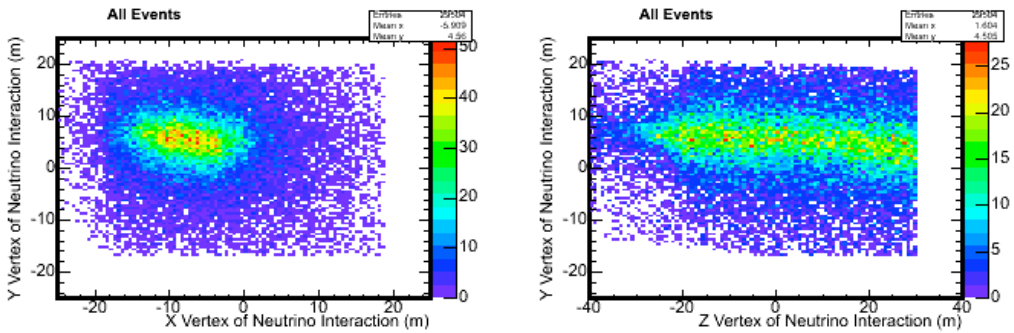


Rock Events

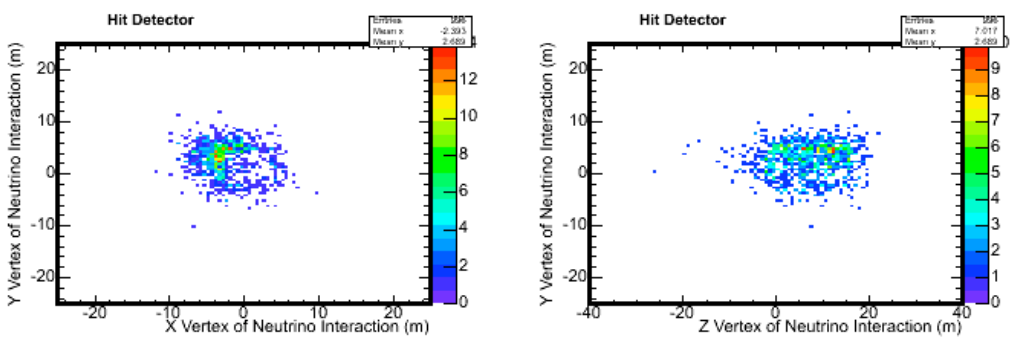
- Alysia Marino
- In MINOS, about as many μ enter detector as ν interactions occur in it
- 1st stab at rock events
- Will be overlaid with detector interactions

Looking Into Beam | Side view

Generated



Hit Detector

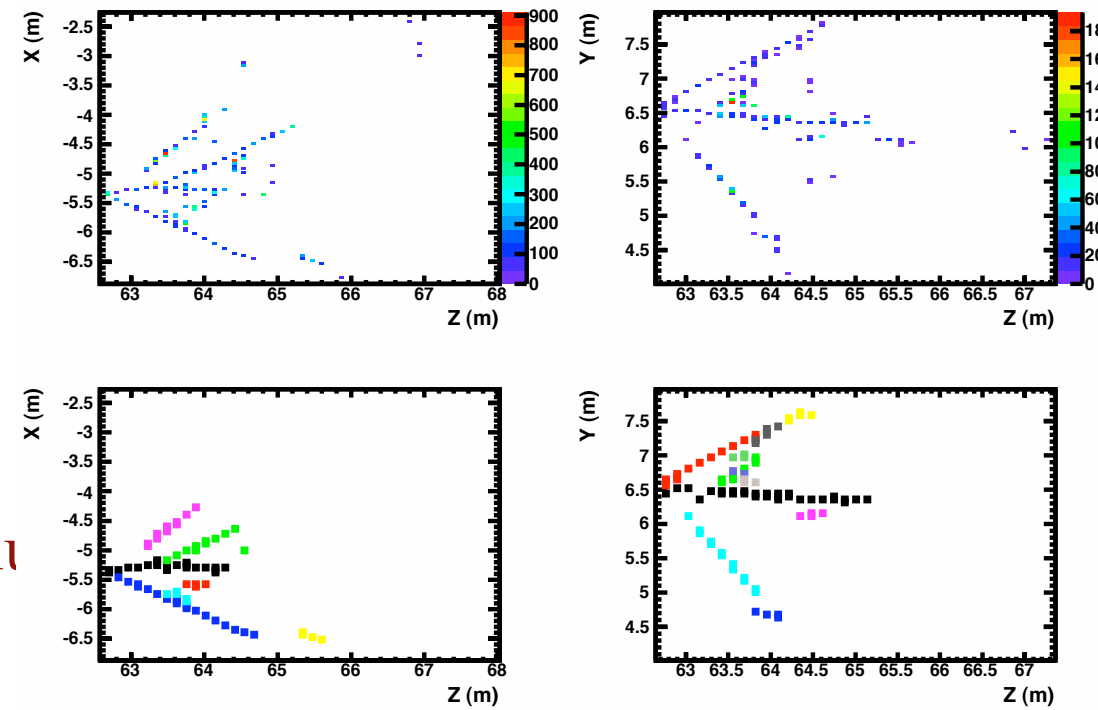


Overburden Simulation

- Kevin Lee
- Stand alone simulations of photons in a rock overburden
- Kevin is reorganizing his results into ntuples for further study
  - How often can photon be tagged by correlated charged particle?

Reconstruction

- Caius Howcroft and Hai Zheng
- SoCal: C++ quasi-framework
  - Lightweight, fast, and simple
  - Not intended as a long-term solu
- Existing elements
  - Event Display
  - Proto- detector response, geometry
  - MINOS "Sub-Shower" package incorporated



Framework

- Fabrizo Furano/ Roberto Stroili
- A longer-term effort for a formal framework
- Based on the BaBar framework
  - Module-based
- Progress so far:
  - De-Babarization
  - Replacement of pre-STL wrappers, etc.

Upcoming Goals/ Needs

Reconstruction

- Perhaps the most important short term goal:
  - Implementing the “20% increase in FOM” seen in hand scanning.
  - Proceed with SoCal? More people can do this than could learn to work with the existing FORTRAN code!
  - Requires progressing to full reconstruction and Event ID
- More people are needed!

Simulations

- Near Detector:
  - (How) Can the electronics handle the rate of detector and rock interactions
  - Spiral approach:
  - Events/spill
  - Fraction of cells with hits from multiple interactions
  - How well can reconstruction seperate them
- IPND
  - Mark Messier

C++ based MC

- Existing MC used by NOvA is MINOS MC:
  - gminos - neugen3/geant3
  - minimum C++ classes have been extracted for non-MINOS use
- New C++ Simulation framework
  - In development by MINOS
  - Pluggable interaction generator, particle tracker, geometry
  - Despite the wait, I see know reason not to wait for it for NOvA - other points of view are most welcome!
  - MINOS expects to use in Fall 2006

Overburden

- The other most important near term goal
- Is 3m sufficient? Can it be less?
- Easy to prove insufficiency
  - Leon has shown single photons are a significant background, but how often can they be tagged by nearby activity?

This Meeting

- Two parallel sessions tomorrow
- Morning: Framework/Reco issues
- Afternoon: Simulations